

Supporting Information to:

*“Rotationally inelastic scattering of O_3 -Ar:
State-to-state rates with the MultiConfigurational
Time Dependent Hartree method”*

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Figure S1 shows the population for $J_{tot}=25$ as a function of time with 40 SPF basis for 666 and 668 O₃-Ar systems. Left figure represents the population for the $^{16}\text{O}^{16}\text{O}^{16}\text{O}$ -Ar and right figure represents that of $^{16}\text{O}^{16}\text{O}^{18}\text{O}$ -Ar.

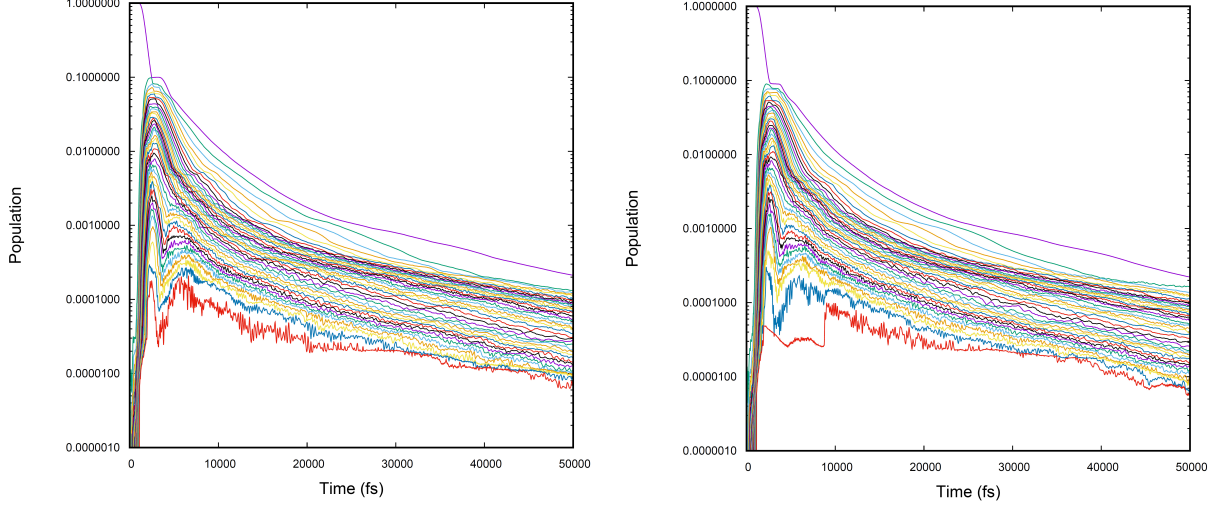


Figure S1: For $J_{tot}=25$, natural population of the SPF as a function of time for $^{16}\text{O}^{16}\text{O}^{16}\text{O}$ -Ar on the left and $^{16}\text{O}^{16}\text{O}^{18}\text{O}$ -Ar on the right.

The close correspondence of the computed and interpolated transition probabilities for some of the transitions for different J_{tot} are represented in the figures below for the two systems.

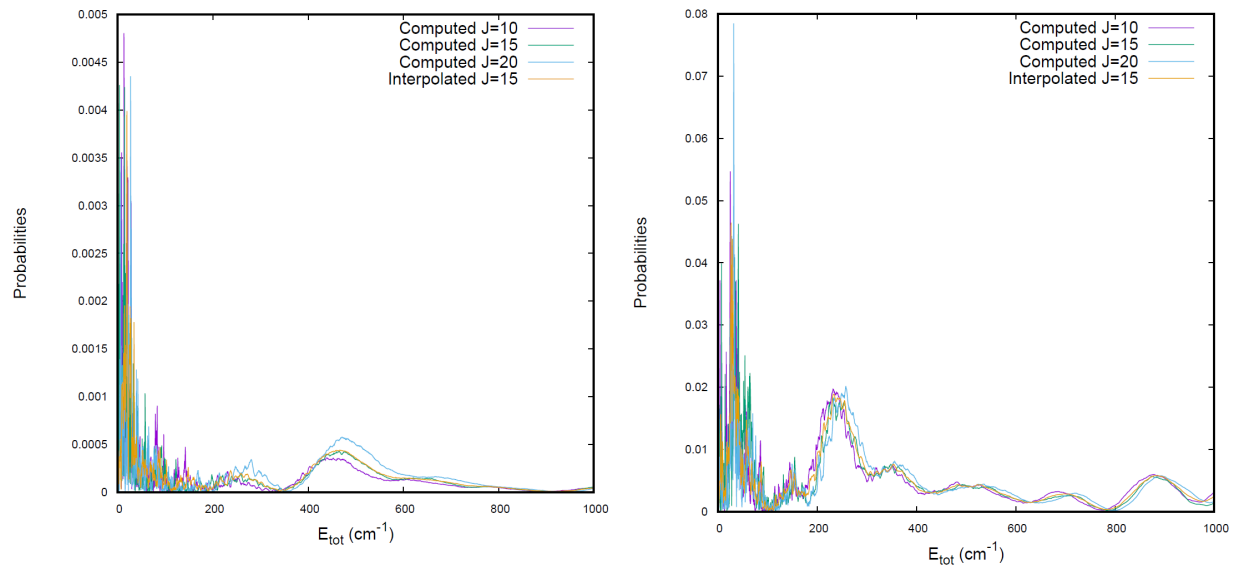


Figure S2: Comparison of the calculated and interpolated transition probability for different values of J_{tot} for a $0_{00} \rightarrow 1_{11}$ transition for 666 (left) and 668 (right) $\text{O}_3\text{-Ar}$.

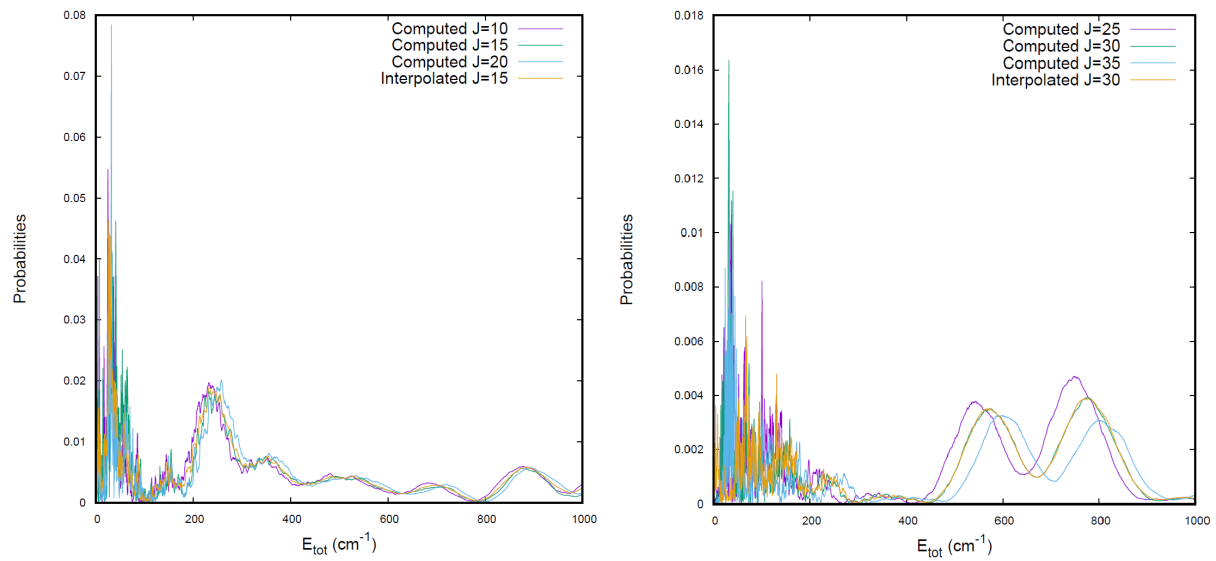


Figure S3: Comparison of the calculated and interpolated transition probability for different values of J_{tot} for a $0_{00} \rightarrow 2_{02}$ transition for 666 (left) and 668 (right) $\text{O}_3\text{-Ar}$.

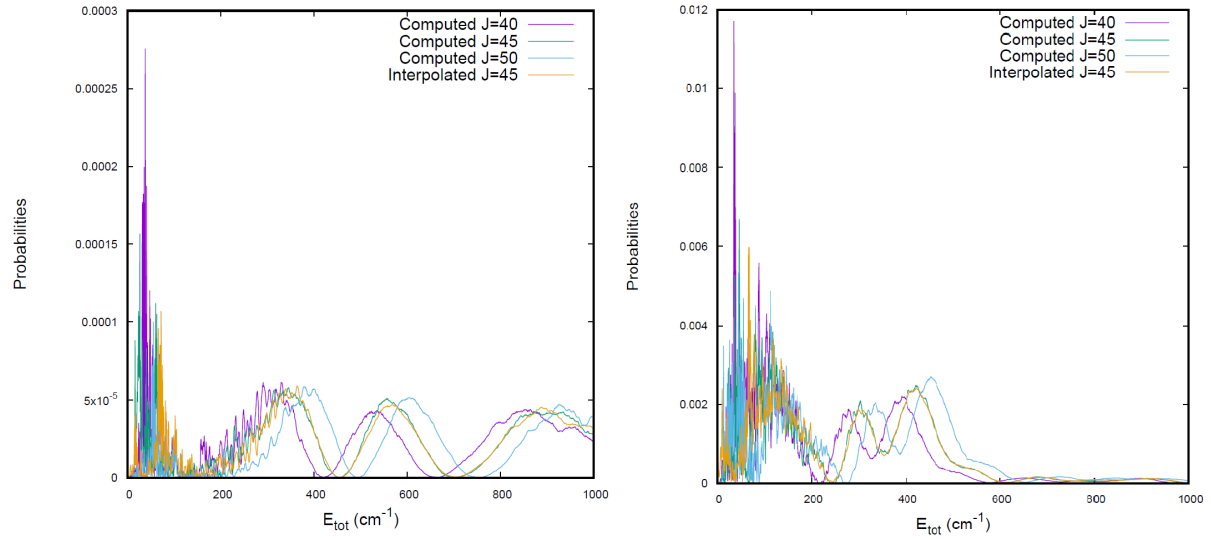


Figure S4: Comparison of the calculated and interpolated transition probability for different values of J_{tot} for a $0_{00} \rightarrow 3_{22}$ transition for 666 (left) and 668 (right) O_3 -Ar.

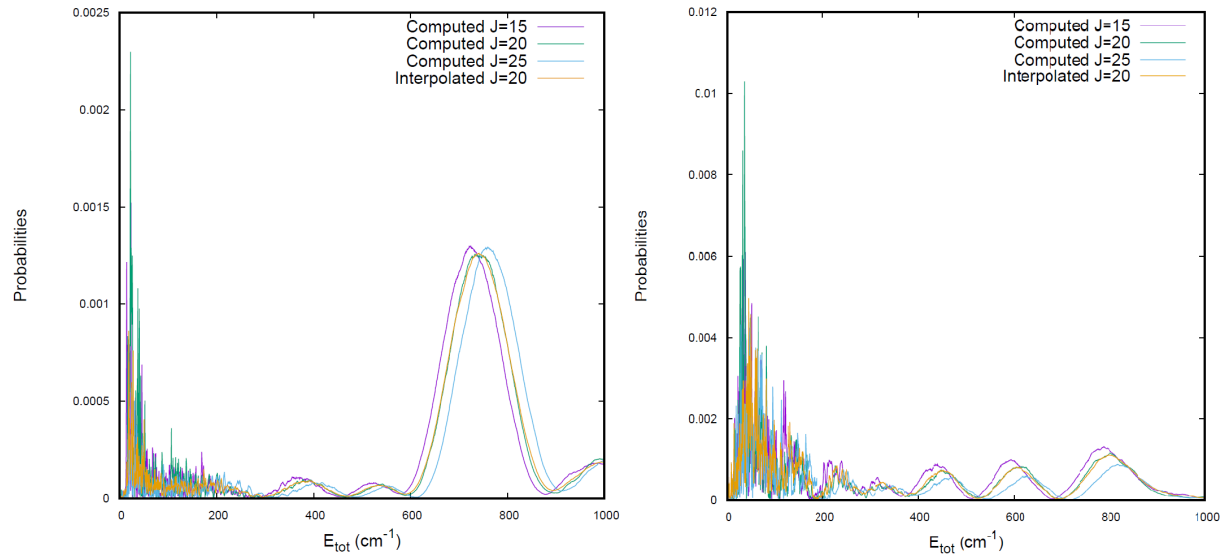


Figure S5: Comparison of the calculated and interpolated transition probability for different values of J_{tot} for a $0_{00} \rightarrow 4_{04}$ transition for 666 (left) and 668 (right) O_3 -Ar.

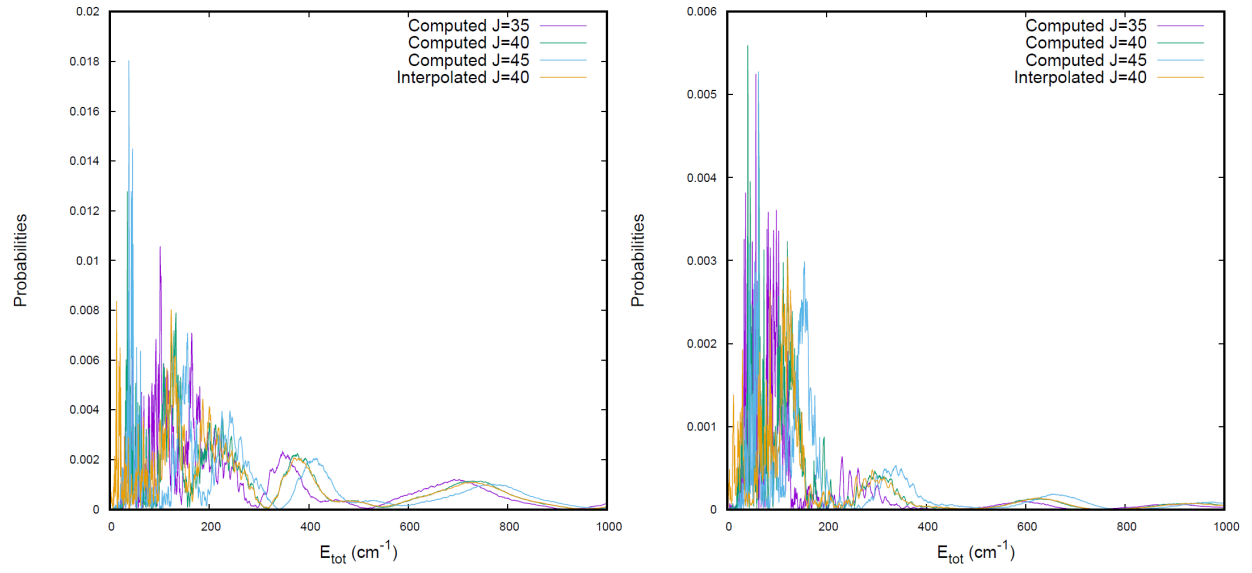


Figure S6: Comparison of the calculated and interpolated transition probability for different values of J_{tot} for a $0_{00} \rightarrow 5_{15}$ transition for 666 (left) and 668 (right) $\text{O}_3\text{-Ar}$.

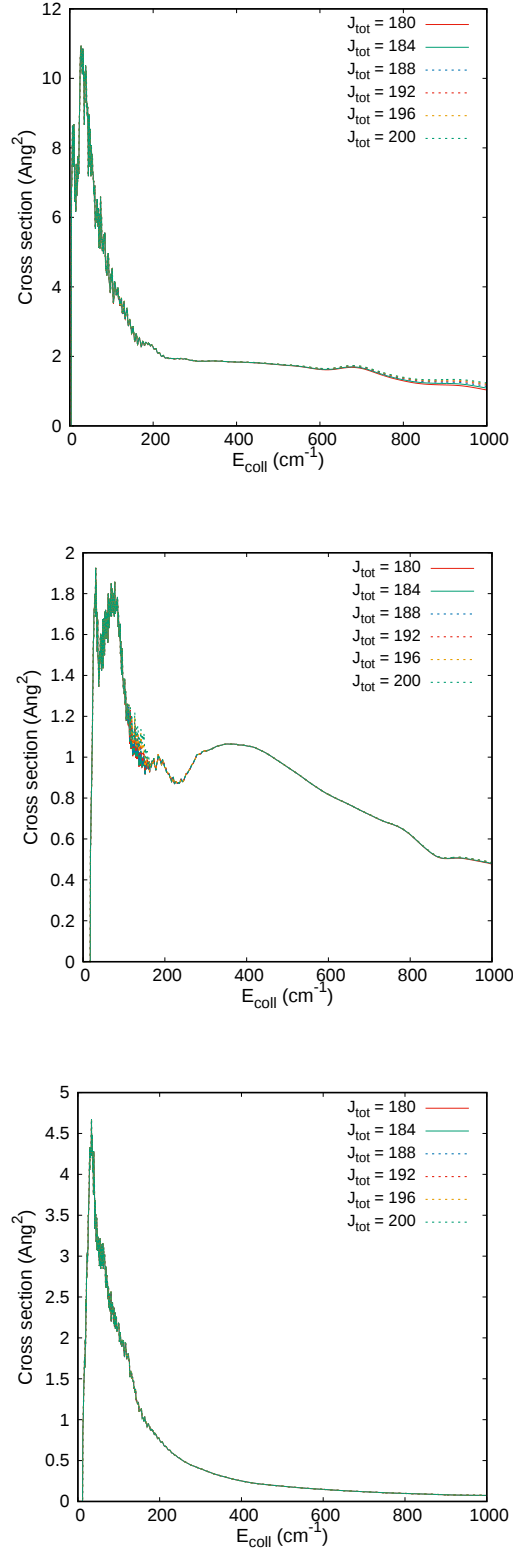


Figure S7: Behavior of several example cross-sections *vs.* energy as a function of J_{max} between 180 and 200. We plot cross sections against energies up to 1000cm^{-1} and in all cases find the cross-sections already well converged with $J_{\text{max}} = 180$. Upper panel: $0_{00} \rightarrow 1_{11}$ transition. Middle panel: $0_{00} \rightarrow 3_{22}$ transition. Lower panel: $0_{00} \rightarrow 4_{13}$ transition.